

REMARKS/ARGUMENTS

Applicants acknowledge the receipt of the Office Action dated June 14, 2005, in which Claims 1-67 are rejected under 35 U.S.C. §103(a) as being unpatentable over 6,124,367 (hereafter *Plecha et al*) in view of 6,130,184 (hereafter *Geerlings et al*).

Status of the Claims

In Applicants' previous Response dated May 6, 2005 to the Restriction Requirement mailed on April 8, 2005, Applicants had elected Group III with traverse and argued that Claims 7-17 from Group II should be reassigned to Group III. In particular, Applicants noted that Claims 7-17 are dependent from elected Claim 1. Since the Restriction Requirement was made final in the Office Action dated June 14, 2005, Applicants assume that original Claims 7-16 are meant to be withdrawn. Similarly, Applicants assume that previously presented new claims 61-66, which are dependent from Claims 7 and 11, most likely belong to non-elected Group II drawn to a method for preparing a catalyst, and are also meant to be withdrawn.

Applicants respectfully request the Examiner to consider the reassignment of Claim 17 from Group II to elected Group III as Claim 17 clearly does not recite a step for preparing a catalyst, but instead recites a limitation on the composition of the hydrocarbons produced by the process of Claim 1. Hence, Applicants believe that it is quite clear that Claim 17 should be rejoined to Group III.

No claims were amended by this response. Claims 7-16 and 61-66 are assumed to be withdrawn from examination at this time. Claims 18-42 were previously cancelled. Applicants respectfully request confirmation from the Examiner that the pending claims are currently Claims 1-17 and 43-67, and furthermore that the claims being currently examined are Claims 1-6, 17, 43-60 and 67.

Rejection of Claims Under 35 U.S.C. § 103(a).

In the Office Action mailed on June 14, 2005, it is noted that all Claims 1-67 were rejected in the Office Action, but as stated above, Applicants have assumed in this response that the rejection applies to the claims which are neither cancelled nor withdrawn from consideration due to the previous Restriction Requirement. Hence, Applicants have proceeded with this Response as if only Claims 1-6, 17, 43-60, and 67 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Plecha et al.* in view of *Geerlings et al.*

In the Office Action, Applicants appreciate that the Examiner acknowledged that the teaching in *Plecha et al* is limited to the loading of cobalt metal in the amount of 2 to 40 wt%. In fact, the

examples in *Plecha et al* do not exceed a loading above 12 wt% cobalt. It is Applicants' position that, in complete contrast to the position taken by the Examiner, it would not have been obvious to a person having ordinary skill in the art to increase the loading of *Plecha et al* in a manner that would render the present claims unpatentable. The Examiner takes the position that *Geerlings et al* teaches the use of mechanically strong catalysts with higher cobalt loading of at least 70% by weight and that the instant claimed invention is considered obvious as both references teach the use of cobalt-based catalysts for the utility of hydrocarbon synthesis from synthesis gas and that it would then be obvious to combine the teachings of the two applied references to provide the instant claimed invention.

The combination of Plecha et al with Geerlings et al fails to teach all of the elements in Claim 1

Applicants respectfully disagree with the rejection, since the combination of *Plecha et al* with *Geerlings et al*. does not teach nor suggest all of the elements of the claims as required by MPEP 2143.03 (recited below). Thus a *prima facie* obviousness rejection was not established.

MPEP 2143.03 "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)."

Plecha et al discloses a titania-containing catalyst support which is strengthened by the combination of small amounts of alumina and silica as binders. A catalyst can be further formed by dispersing one or more active metals active for Fischer-Tropsch synthesis over the surface of the support, and the formed catalyst can maintain its integrity under conditions of relatively high water partial pressure at elevated temperature used in Fischer-Tropsch processes (see *Plecha et al* Col. 1 lines 44-48). Cobalt can be one of the active metals (see *Plecha et al* Col. 1 lines 44-45; col. 3 line 5) and can be used in amounts of about 2-40 wt% (see *Plecha et al* Col. 3 lines 15-17). The titania-containing support is formed into porous particles prior to dispersion of the one or more active metals (see *Plecha et al* Col. 2 lines 39-42). The dispersion techniques disclosed include impregnation (dry or incipient wetness) or spray drying. The two catalyst examples employed an incipient wetness impregnation.

Thus *Plecha et al*, as a whole, discloses a catalyst similar to what Applicants define as a 'supported catalyst'. As stated in paragraph [0026] of Applicants' originally filed application "*a supported catalyst is a catalyst prepared by depositing an active metal to a preformed bulk support*". The dispersion of an active metal such as cobalt on a support is known to be limited by the support's pore structure, such as surface area and total pore volume. In other words, there is a limited amount of space in a given support to load an active metal. *Plecha et al* himself acknowledges this limitation of loading based on pore volume of the support, when he states "*The higher pore volume is an especially important feature because more active metal can be deposited per incipient wetness impregnation as pore volume increases.*" (see *Plecha et al* Col. 4 lines 48-50). *Geerling et al.* also points to the restriction of cobalt loading by pore volume of porous supports when impregnation is employed for preparing the catalyst (see *Geerlings et al* Col. 1 lines 33-35). However the pore volume cannot be increased indefinitely without affecting the support strength, so *Plecha et al*'s challenge for the supported catalyst containing cobalt is to provide a pore volume on the support as large as possible while providing an acceptable strength to the catalyst supported thereon. Knowing that the loading of the active metal in *Plecha et al*'s catalyst is largely limited by the pore volume of the titania-containing support, *Plecha et al* does not teach how one would or could achieve more than 40% by weight of cobalt based on the total weight of the catalyst compositions disclosed herein.

In summary, *Plecha et al* does not teach a bulk cobalt catalyst comprising between about 40 and about 90 percent by weight of cobalt, where a cobalt precursor is precipitated so as to form the porous structure of the catalyst itself.

Turning now to the other reference, *Geerlings et al* teaches a preparation of mechanically strong catalysts with a high loading of cobalt and an excellent performance. The preparation comprises "(a) mixing (1) titania or a titania precursor, (2) a liquid, and (3) a cobalt compound, which is at least partially insoluble in the amount of liquid used, to form a mixture; (b) shaping and drying of the mixture thus obtained; and (c) calcination of the composition thus obtained." (see *Geerlings et al* Col. 2 lines 3-8). The partial insolubility of the cobalt compound in the mixture is further explained in *Geerlings et al* Col. 2 lines 40-48. "Any cobalt compound of which at least 50% by weight is insoluble in the amount of the liquid used, can be suitably used in the process of the present invention. Preferably, at least 70% by weight of the cobalt compound is insoluble in the amount of liquid used, more preferably at least 80% by weight, still more preferably at least 90% by weight." So the 'at least 70% by weight of the cobalt compound' refers to the degree of insolubility of the cobalt compound in the liquid, rather than the resulting cobalt loading in the final catalyst.

The cobalt loading range disclosed by *Geerlings et al* in the mixture is “up to 60 parts by weight of cobalt per 100 parts by weight of refractory oxide” (see Col. 2 lines 49-52), which results in a cobalt loading of at most 37.5 percent based on the total weight of the catalyst [where $37.5\% = 60 \text{ pbw} \times 100 / (100 \text{ pbw} + 60 \text{ pbw})$, where ‘pbw’ means parts by weight]. The examples disclose a cobalt loading of 18 wt% or 20 wt% Co. Therefore, *Geerlings et al* does not teach nor suggest the use of a cobalt loading of about 40% to about 90% cobalt by weight, and hence *Geerlings et al* cannot provide at least one missing limitation not taught in *Plecha et al* to provide all the limitations of Claim 1.

Neither reference, alone or combined, suggests the use of a bulk cobalt catalyst with a high cobalt loading range to provide the present Claim 1. Applicants therefore believe that Claim 1 is patentable over the applied art. Claims 2-6, 17, 43-60 and 67 depend from Claim 1, and since each of these dependent claims ultimately carries all the limitation of the claim to which they refer; Claims 2-6, 17, 43-60 and 67 should, therefore, be allowable as well.

Conclusion

In conclusion, Applicants’ assert that *Plecha et al* fails to teach at least one element of Claim 1, and that missing element is not taught nor suggested by *Geerlings et al*. Clearly, a fair and proper reading of the references and an understanding of the science of supported catalysts would not lead a person having ordinary skill in the art to the claimed invention. Allowance of Claim 1 and all of its dependent claims is respectfully solicited.

Also, Applicants again respectfully request the rejoinder of Claim 17 to the claims under examination for the reasons described above.

In this Response, Applicants may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the prior art, which have yet to be raised, but which may be raised in the future. No new matter is introduced by this Response.

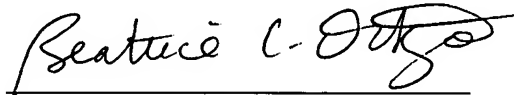
This is believed to be a full and complete response to the Office Action of June 14, 2005, as Applicants believe they have addressed the issues raised in the Office Action. Should Applicants not have properly understood the Office Action to which this Response is filed, or there is any remaining issue which the Examiner believes would possibly be resolved by a conversation, the Examiner is

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Response filed on October 13, 2005

invited to call the undersigned at (281) 293-4751 so that further delay in a Notice of Allowance can be avoided.

Should any fees have been inadvertently omitted, or if any additional fees are required or have been overpaid, please appropriately charge or credit those fees to Deposit Account Number, 16-1575 of ConocoPhillips Company, Houston, Texas and consider this a petition for any necessary extension of time.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Beatrice C. Ortego", written over a horizontal line.

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